

NOMENCLATURAL AND TAXONOMIC REVIEW  
OF KNOTROOT BRISTLE GRASS  
(*SETARIA PARVIFLORA*, GRAMINEAE)

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**ABSTRACT.** We support Kerguélen's (1977, 1987) assertion that both Lamarck (1798) and Willdenow (1809) independently published the identical name *Panicum geniculatum* and that P. Beauvois (1812) based his *Setaria geniculata* on Willdenow's name. The type collections of Lamarck's and Willdenow's names are different, but were from the same locality and belong to the same species. Willdenow's name, which is traced to Vahl's unpublished manuscript, is a later homonym, is illegitimate, and cannot serve as a basionym. Because of the illegitimacy of *P. geniculatum* Willd., *S. geniculata* is treated as a *nom. nov.* with its priority from 1812. *Cenchrus parviflorus* Poir. (1804) is the earliest legitimate name available for this species, and therefore, *S. parviflora* (Poir.) Kerguélen (1987) is recognized.

**Key Words:** *Cenchrus parviflorus*, *Panicum geniculatum*, *Setaria geniculata*, *S. gracilis*, *S. parviflora*, Gramineae, knotroot bristle grass, nomenclature

The knotroot bristle grass, long known by the name *Setaria geniculata*, is widespread in the US and extends south to Chile. In the past, the authorship of *S. geniculata* was cited as: (Lam.) P. Beauv. This citation implies that Beauvois based his *S. geniculata* on *Panicum geniculatum* Lam. 1798 (vide Hitchcock 1931: 320; 1951: 949–951). In a few early botanical works, *P. geniculatum* was attributed to Poiret (Joseph Jacquin 1820: 37; Steudel 1841: 256; Trinius 1834: 222) or to Hornemann (Roemer and Schultes 1817: 491; Trinius 1826: 163). It is noted here that Hitchcock's extensive synonymy included, among others, *Cenchrus parviflorus* Poir. (in Lamarck 1804) and *S. gracilis* Kunth (1816).

Contrary to early beliefs, Beauvois did not base his *Setaria geniculata* on *Panicum geniculatum* Lam. (1798), but explicitly referred to *P. geniculatum* Willd. (1809). Willdenow did not refer to Lamarck,

but referenced Hornemann (1807). Although both versions of *P. geniculatum*, Lamarck's and Willdenow's, have the same type locality ("Antilles/Guadeloupe"), the two names were published independently and have different types. Willdenow's work was generally ignored in botanical works of the 19th and 20th centuries, but it was recognized by Roemer and Schultes (1817: 491), Jacquin (1820: 37), Sprengel (1825: 304), and Steudel (1841: 256).

Perhaps unaware of P. Beauvois's publication of *Setaria geniculata*, Roemer and Schultes (1817: 491–492) published the same combination and based it on *Panicum geniculatum* Hornemann (1807) *ex* Willdenow (1809). Their comb. nov. is a later isonym (of P. Beauv. 1812). They appear to be the first to remark that *P. geniculatum* Willd. was perhaps the same as *P. geniculatum* Lam. ("An idem cum *P. geniculato* Poiret ..."). Jacquin (1820: 37) and Steudel (1841: 256) also treated Lamarck's (as Poiret's) and Willdenow's *P. geniculatum* as applying to a single species.

Roemer and Schultes (1817) referred to *Pennisetum geniculatum* J. Jacq. Since Jacquin's *Pennisetum geniculatum* was not published until 1820, Roemer and Schultes must have had access to Jacquin's unpublished work. For his *Pennisetum geniculatum*, Jacquin referenced Hornemann, Willdenow, and Lamarck. Since Lamarck's publication is the earliest, we assert that Jacquin's grass name was based on Lamarck's name.

Kerguélen (1977: 344–345) was perhaps the first to emphasize the fact that Beauvois based his *Setaria geniculata* on *Panicum geniculatum* Willd. (1809: 1031). In his nomenclatural analysis, Kerguélen concluded that: 1.) *P. geniculatum* Willd. is a later homonym of *P. geniculatum* Lam. (and hence, illegitimate and does not have priority); 2.) the identities of *Cenchrus parviflorus* Poir. and of *P. geniculatum* Willd. were uncertain; and 3.) *P. geniculatum* Lam. cannot be transferred to *Setaria*, as it would create a later homonym (non *S. geniculata* P. Beauv. 1812).

Nevertheless, the name *Setaria geniculata* is legitimate, but its author is Beauvois alone (no parenthetical author), and its priority dates from Beauvois' publication in 1812, not from the publication of either Lamarck 1798 (whose work Beauvois did not cite) or Willdenow 1809 (whose name is a later homonym). Since Kerguélen was uncertain whether *Cenchrus parviflorus* belonged to the same species as *S. geniculata*, he chose to use the name *S. gracilis* Kunth (1816: 109).

Kerguélen (Feb 1987: 161–162) later, however, decided that *Cenchrus parviflorus* Poir. and *Setaria geniculata* P. Beauv. do belong to the same species as *S. gracilis* and therefore proposed

the combination: *S. parviflora* (Poir.) Kerguélen, “*parviflorus*,” being the earliest available epithet. He cited *S. gracilis*, among other names, as a synonym of his new combination. Webster (1987: 208), perhaps unaware of Kerguélen’s 1987 work, followed Kerguélen (1977).

At the time Kerguélen (Feb 1987) made the combination *Setaria parviflora*, names of species could be conserved only if the species concerned was of major economic importance (Art. 14.2 of the Sydney Code; Voss 1983); unfortunately, *S. geniculata* (= *S. parviflora*) did not meet that criterion, so Kerguélen was not able to propose conservation of the name *S. geniculata*. In the Berlin Code (Greuter 1988), one year too late for Kerguélen, Art. 14.2 was amended to include conservation of the names of species that had been widely and persistently used (in spite of their illegitimacy or not having priority) even if the species concerned was not of major economic importance.

We considered the possibility of reviving the name *Setaria geniculata* by establishing a link between *Panicum geniculatum* Willd. and *P. geniculatum* Lam. If Willdenow were to refer to Lamarck directly or indirectly, the authorship of *S. geniculata* must be (Lam.) P. Beauv. Our analysis follows.

Both Lamarck (1744–1829) and Willdenow (1765–1812) were contemporary botanists. It puzzled us that Willdenow was not aware of Lamarck’s earlier usage of the name *Panicum geniculatum*. Lamarck (1798: 727 ‘737’) based his *P. geniculatum* on a specimen collected from Guadeloupe . . . Antilles, on deposit at P-JU. Willdenow (1809: 1031) also gave Antilles as the place of origin for his type specimen. It is unclear whether it was a coincidence that both Lamarck and Willdenow chose a specimen from the Antilles for the type specimen.

Willdenow (1809: 1031) referenced Hornemann’s 1807 work (“Hornem. Cat. Hort. haf. p. 28.”). Hornemann mentioned the following: “*Panicum geniculatum* Vahl.” In his subsequent publication, Hornemann (1813: 81) referenced Willdenow, copied Willdenow’s 1809 description, cited the locality as Antilles, and stated that this grass was introduced to the Botanical Garden at Copenhagen in 1803. He did not refer to either Lamarck or Vahl.

Both Hornemann (1770–1841) and Vahl (1749–1804) were Danish botanists and worked at the herbarium of the University of Copenhagen (c). To the best of our knowledge, Vahl did not use *Panicum geniculatum* in his published works; this makes Hornemann’s reference to Vahl puzzling.

We corresponded with Peter Wagner (c), who provided the following information. Vahl had prepared an index of cards and planned to publish a revised version of *Species Plantarum* in several volumes (titled

“Enumeratio Plantarum”). Unfortunately, after the publication of the first volume in 1804, he died. After Vahl’s death, the Danish king bought Vahl’s herbarium and library from his widow and placed it in the botanical garden. The second volume, posthumously issued in 1805, was edited by N. Toender Lund, J. W. Hornemann, and P. Thonning using Vahl’s herbarium as well as his cards (cf. TL2 6: 631, no. 15,733. 1986). In their preface (p. viii), they stated that if the volume were to find recognition among botanists, the rest of Vahl’s manuscript or parts of it would be published from the cards. Unfortunately, war with England (1807–1814) and the death of Toender Lund (in 1809) probably terminated the publication.

Regarding Vahl’s usage of *Panicum geniculatum*, Wagner stated that Vahl, in his unpublished portion of the index, used the name *P. geniculatum*. [This explains Hornemann’s 1807 reference to Vahl on the usage of the name *P. geniculatum*.] For his *P. geniculatum* (which he at first called *P. pauciflorum*), Vahl provided a description and mentioned the habitat as Ile de France. Since the usage of the name *P. pauciflorum* was not established until 1810 by R. Brown, we speculate that Vahl realized that his plant was the same as that of Lamarck, and therefore abandoned the name *P. pauciflorum* and accepted Lamarck’s name. But Vahl did not reference Lamarck; hence, it is impossible to prove that he accepted Lamarck’s name. [About 10 years ago, Carlo Hansen (c) also provided the same information (i.e., Vahl’s usage of *P. geniculatum* and *P. pauciflorum*) to the senior author.]

Consequently, no link can be established between Lamarck’s and Willdenow’s treatments, and therefore, *Setaria parviflora* is the recognized name. The paragraphs below summarize the pertinent taxonomic data.

*Setaria parviflora* (Poir.) Kerguelen, *Lejeunia*, n.s., 120: 161. 1987.

*Cenchrus parviflorus* Poir. in Lam., *Encycl.* 6: 52. 1804; *Chaetochloa corrugata* var. *parviflora* (Poir.) Scribn. & Merr., *Bull. Div. Agrostol.*, U.S.D.A. 21: 24. 1900; *Setaria ventenatii* Kunth, *Revis. Gramin.* 1: 251, t. 37. 1830, *nom. superfl.*; *Panicum ventenatii* Steud., *Nomencl. Bot.*, ed. 2, 2: 265. 1841; *Chamaeraphis ventenatii* Beal, *Grasses N. Amer.* 2: 153. 1896; *Chaetochloa ventenatii* Nash in Kearney, *Contr. U.S. Natl. Herb.* 5(6): 515. 1901. TYPE: Puerto Rico: *Ventenat s.n.* (P).

*Panicum vulpinum* L., *Amoen. Acad.* 4: 134. 1759 [*non S. vulpine* (Willd.) P. Beauv. 1812]. LECTOTYPE (vide Merr., Dept. Agric. & Nat. Resources, Bur. Sci. Manila Publ. 9: 91. 1917): illustration in Rumph., *Herb. Amboin.* 6: t. 7, f. 2, 1750, B; EPITYPE (vide Veldkamp, *Taxon* 49: 253. 2000):

- [INDONESIA.] Amboina: Jul–Nov 1913, *C. B. Robinson*, *Plantae Rumphiana* Amboinensis No. 41, L; ISOLECTOTYPE: BM.
- Panicum geniculatum* Lam., *Encycl.* 4: 727 ('737'). 1798; *Pennisetum geniculatum* (Lam.) J. Jacq., *Eclog. Gram. Rar.* 3–4: 37, t. 26. 1820; *Chamaeraphis glauca* var. *geniculata* (Lam.) Kuntze, *Revis. Gen. Pl.* 2: 767. 1891; *Chaetochloa imberbis* var. *geniculata* (Lam.) Scrib. & Merr., *Bull. Div. Agrostol., U.S.D.A.* 21: 12. 1900; *Setaria glauca* var. *geniculata* (Lam.) Urb., *Symb. Antill.* 4: 96. 1903; *Chaetochloa geniculata* (Lam.) Millsp. & Chase, *Publ. Field Columbian Mus., Bot. Ser.* 3: 37. 1903. TYPE: "Antilles [West Indies] and Guadelope"; LECTOTYPE (vide Kerguelen, *Lejeunia*, n.s., 120: 162. 1987): P, P-JU 2572.
- Panicum geniculatum* Hornem. [*Enum. Pl. Hort. Hafn.* 28. 1807, *nom. nud.*] *ex Willd.*, *Enum. Pl.* [pt. 2]: 1031. 1809, *nom. illeg. (non Lam. 1798)*; *Setaria geniculata* P. Beauv., *Ess. Agrostogr.* 51, 169, 178. 1812; *Roem. & Schult., Syst. Veg.* 2: 491–492. 1817. TYPE: "Antilles" [West Indies].
- Setaria gracilis* Kunth in Humb., *Nov. Gen. Sp. (H.B. & K.)* 1(ed. qu.): 109. 1816; R. D. Webster, *Australian Paniceae* 208. 1987. TYPE: "Crescit in montanis regni Quiltense, prope Chillo" *F. W. H. A. Humboldt & A. J. A. Bonpland s.n.* (P).
- Panicum glaucum* var. *purpurascens* Elliott, *Sketch Bot. S. Carolina* 1: 113. Dec 1816. HOLOTYPE: U.S.A. South Carolina: Parris Island and Charleston Neck, *Elliott s.n.* (CHARL).
- Panicum imberbe* Poir. in Lam., *Encycl., Suppl.* 4: 272. 1816; *Setaria imberbis* (Poir.) Roem. & Schult., *Syst. Veg.* 2: 891. 1817; *Setaria glauca* var. *imberbis* (Poir.) Griseb., *Fl. Brit. W.I.* 554. 1864; *Chamaeraphis glauca* var. *imberbis* (Poir.) Kuntze, *Revis. Gen. Pl.* 2: 767. 1891; *Chaetochloa imberbis* (Poir.) Scribn. in Scribn. & J. G. Sm., *Bull. Div. Agrostol., U.S.D.A.* 4(6): 39. 1897; *Chamaeraphis imberbis* (Poir.) Kuntze *ex Stuck.*, *Anales Mus. Nac. Buenos Aires* 11: 76. 1904. TYPE: NORTH AMERICA and BRAZIL.
- Panicum laevigatum* Muhl. *ex Elliott*, *Sketch Bot. S. Carolina* 1: 112. 1816, *nom. illeg. (non Lam. 1779)*; *Pennisetum laevigatum* Nutt., *Gen. N. Amer. Pl.* 1: 55. 1818; *Setaria laevigata* (Nutt.) Schult., *Mant.* 2: 276. 1824; *Setaria glauca* var. *laevigata* (Nutt.) Chapm., *Fl. South. U.S.* 578. 1860; *Chamaeraphis glauca* var. *laevigata* (Nutt.) Beal, *Grasses N. Amer.* 2: 155. 1896; *Ixophorus glaucus-laevigata* (Nutt.) Chapm. *ex Gatt.*, *Fl. Tennessee* 38. 1901. TYPE: U.S.A. South Carolina: Ellings Island, *S. Elliott 352* (HOLOTYPE: PH).
- Setaria purpurascens* Kunth in Humb., *Nov. Gen. Sp. (H.B. & K.)* 1(ed. qu.): 110. 1816; *Setaria glauca* var. *purpurascens* (Kunth) Torr., *Fl. N. Middle United States* 1: 153. 1824; *Panicum imberbe* var. *purpurascens* (Kunth) Döll in Mart., *Fl. Bras.* 2(2): 157. 1877; *Setaria gracilis* var. *purpurascens* (Kunth) Arechav., *Anales Mus. Nac. Montevideo* 1(2): 164. 1894; *Chaetochloa purpurascens* (Kunth) Scribn. & Merr., *Bull. Div. Agrostol., U.S.D.A.* 21: 13. 1900; *Setaria imberbis* var. *purpurascens* (Kunth) Hack. *ex Stuck.*, *Anales Mus. Nac. Buenos Aires* 13 (ser. 3, 6): 442. 1906; *Setaria geniculata* var. *purpurascens* (Kunth) Urb., *Symb. Antill.* 8: 35. 1920; *Chaetochloa viridis* var. *purpurascens* (Kunth) Honda, *Bot. Mag. (Tokyo)*

- 38: 197. 1924; *Chameraphis glauca* forma *purpurascens* (Kunth) Döll ex Kuntze, Revis. Gen. Pl. 2: 767. 1891. TYPE: ECUADOR. *F. W. H. A. Humboldt & A. J. A. Bonpland.*
- Setaria affinis* Schult., Mant. 2: 276. 1824. TYPE: U.S.A. Georgia and Pennsylvania: *G. H. E. ["H."] Muhlenberg 153.* [based on Muhlenberg's *Panicum* No. 4.]
- Setaria berteroniana* Schult., Mant. 2: 276. 1824; *Panicum berteronianum* (Schult.) Steud., Syn. Pl. Glumac. 1: 50. 1853. TYPE: DOMINICAN REPUBLIC. *C. G. L. Bertero.*
- Panicum dasyurum* Nees in Mart., Fl. Bras. Enum. Pl. 2(1): 241. 1829; *Panicum imberbe* var. *dasyurum* (Nees) Döll in Mart., Fl. Bras. 2(2): 157. 1877; *Setaria gracilis* var. *dasyura* (Nees) Arechav., Anales Mus. Nac. Montevideo 1(2): 165. 1894. TYPE: BRAZIL.
- Panicum flavum* Nees in Mart., Fl. Bras. Enum. Pl. 2(1): 238. 1829; *Setaria flava* (Nees) Kunth, Revis. Gramin. 1: 46. 1829; *Chaetochloa flava* (Nees) Scribn. in Scribn. & J. G. Sm., Bull. Div. Agrostol., U.S.D.A. 4(6): 39. 1897; *Panicum lutescens* var. *flavum* (Nees) Backer, Handb. Fl. Java 2: 142. 1928; *Setaria lutescens* var. *flava* (Nees) Yamam., J. Soc. Trop. Agric. 11: 277. 1937. TYPE: BRAZIL. *W. Sieber.*
- Panicum penicillatum* Willd. ex Nees in Mart., Fl. Bras. Enum. Pl. 2(1): 242. 1829, *nom. illeg. (non Nees ex Trin. 1826)*; *Setaria penicillata* J. Presl in C. Presl, Reliq. Haenk. 1: 314. 1830; *Setaria glauca* var. *penicillata* (J. Presl) Griseb., Fl. Brit. W.I. 554. 1864; *Chamaeraphis glauca* var. *penicillata* (J. Presl) Kuntze, Revis. Gen. Pl. 2: 767. 1891; *Chaetochloa penicillata* (J. Presl) Scribn. in Scribn. & J. G. Sm., Bull. Div. Agrostol., U.S.D.A. 4(6): 39. 1897; *Chaetochloa imberbis* var. *penicillata* (J. Presl) Scribn. & Merr., Bull. Div. Agrostol., U.S.D.A. 21: 11, fig. 2. 1900; *Chamaeraphis penicillata* J. Presl ex Stuck., Anales Mus. Nac. Buenos Aires 13: 442. 1904; *Setaria gracilis* forma *penicillata* (J. Presl) Mez ex Ekman, Ark. Bot. 13: 33. 1913. TYPE: BRAZIL.
- Panicum tejuicense* Nees in Mart., Fl. Bras. Enum. Pl. 2(1): 243. 1829; *Setaria tejuensis* (Nees) Kunth, Revis. Gramin., Suppl. xi. 1834. TYPE: BRAZIL. Tejuco.
- Setaria geniculata* var. *pauciseta* E. Desv. in Gay, Fl. Chil. 6: 248. 1853 [March 1854]; *Setaria gracilis* var. *pauciseta* (E. Desv.) B. K. Simon, Austro-baileya 2: 22. 1984. SYNTYPES: [1] CHILE. Valdivia, *C. Gay*; [2] CHILE. Concepción and Talcahuano, *J. A. Pavón y Jiménez.*
- Setaria stipaeulmis* Müll. Hal., Bot. Zeitung (Berlin) 19: 323. 1861. TYPE: U.S.A. Texas: Rio Brazos, *T. Drummond.*
- Setaria geniculata* var. *latifolia* E. Fourn., Mexic. Pl. 2: 46. 1886. TYPE: MÉXICO. *F. J. Ruprecht 2639.*
- Setaria streptobotrys* E. Fourn., Mexic. Pl. 2: 47. 1886; *Chaetochloa imberbis* var. *streptobotrys* (E. Fourn.) Scribn. & Merr., Bull. Div. Agrostol., U.S.D.A. 21: 13. 1900. SYNTYPES: [1] MÉXICO. *H. G. Galeotti 5832*; [2] MÉXICO. *F. M. Liebmann 358.*
- Setaria perennis* E. Hall ex Smyth, Checkl. Pl. Kansas (ed. 2) 26. 1892; *Chaetochloa imberbis* var. *perennis* (E. Hall ex Smyth) Scribn. & Merr., Bull. Div. Agrostol., U.S.D.A. 21: 12. 1900; *Setaria imberbis* var. *perennis* (E. Hall ex Smyth) Hitchc., Rhodora 8: 210. 1906; *Chaetochloa geniculata*

- var. *perennis* (E. Hall *ex* Smyth) House, Bull. New York State Mus. Nat. Hist. 254: 85. 1924. TYPE: U.S.A. Kansas: *B. B. Smyth*.
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